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Feature Article - Purchasing Power Parities and Real Expenditures - 2002 Benchmark Results for OECD Countries

SYNOPSIS

This article describes how "Purchasing Power Parities" (PPPs) can be used for making international comparisons of national accounting aggregates such as gross domestic product (GDP). PPPs provide a means of making comparisons of economic aggregates between countries based on a common currency unit. For most purposes PPPs are a better method of making such comparisons than that based on simple "exchange rate" conversions. Initial results from the Organisation for Economic Co-operation and Development (OECD) 2002 round of comparisons are presented. The more complex statistical issues involved in calculating PPPs are set out in the OECD publication containing the 1999 PPP results (Purchasing Power Parities and Real Expenditures, 1999 Results OECD, Paris, 2002). It is a useful document in helping users to understand why the OECD considers there is a roughly $\pm 5\%$ error margin involved in PPPs.

INTRODUCTION

Economic statistics for individual countries are commonly presented in several different ways:

- index numbers (typically used for presenting prices statistics such as the consumer price index)
- ratios (eg, the unemployment rate)
- national currency (eg, the national accounts or balance of payments).

A lot of economic analysis concentrates on what is happening within Australia, so expressing economic statistics in Australian dollars enables comparisons to be made easily between different sets of Australian data. However, from time to time, economists become interested in comparing Australian economic data with those for other countries. In some cases, it is fairly easy to do so (eg, comparing the recent growth rate of GDP in Australia with that in the USA). In such a case, the monetary units in which the data are expressed are not important because it is the rate of growth rather than the level of activity that is being compared. On the other hand, there is also interest in the relative levels of activity between countries and in obtaining an overall total measure of activity for a group of countries such as those in the OECD. For example, it is common to see figures quoted for the level of GDP per capita in countries, as a measure of relative economic well-being between countries, or an overall growth rate for all countries in the OECD. In the former case, the main problem in making the comparison is in adjusting the data expressed in national currency units to a common currency such as the \$US. In the latter case, it is necessary to aggregate across different currencies (the euro, the British pound etc).

MAKING INTERNATIONAL COMPARISONS

A common method of converting economic data from a national currency to a common currency such as the \$US is to simply use exchange rates. However, this simplistic approach can be quite misleading because exchange rates can be influenced by factors other than the relative volumes of goods and services produced in a country and traded with others (eg, financial flows or interest rates can have a significant effect on exchange rates). Therefore exchange rate based comparisons often do not reflect the relative purchasing power of different currencies. Also, not all goods and services are traded between countries. A more robust method is to calculate PPPs, which reflect the ratio of the prices in different countries of the goods and/or services produced.

The simplest example of a PPP is regularly presented by The Economist magazine, which shows the relative levels of the prices of McDonald's Big Mac hamburgers between various countries. This form of presentation provides an indication of which countries are "expensive" (ie, those whose PPP for a Big Mac is higher than the equivalent price based on exchange rates) and those that are "cheap". While the Big Mac approach is simplistic, being based on the relative prices of a very limited range of items, it does point to an approach that can be more broadly based.

To calculate PPPs, it is necessary to identify goods and services that are identical in all the countries involved in the comparison and for which prices can be collected. The goods and services concerned need to be representative of the expenditures in each country as well as being comparable between the countries. Tensions arise in identifying products that meet these two criteria, so compromises have to be made in the process.

PER CAPITA VOLUME INDEXES

Calculating PPPs is the first step in making international comparisons of economic aggregates. The second step is to convert economic data expressed in national currency into a common unit (usually \$US) by dividing the values by the PPP for the country concerned (with the United States PPP equalling one).

One of the most common uses of PPP-adjusted data is to calculate per capita volumes for major aggregates such as GDP. Per capita GDP is often used as an indicator of relative wealth between countries. Some commentators criticise its use in this way because it is an incomplete measure of wealth. However, it has the advantage of being the broadest economic measure regularly available across a wide range of countries and there is a high correlation between per capita GDP volumes and the wealth of a country.

Australia has participated in the last six rounds of the OECD's PPP Programme, which the OECD runs in conjunction with Eurostat (the statistical office of the European Union). The most recent completed round was conducted in respect of 2002 and the results are presented in Table 1. In presenting the results of the 2002 round, the OECD has emphasised the need to avoid reading too much into small differences between countries' GDP per capita, based on PPP conversions.

Using the per capita index of GDP volumes based on PPPs to establish a strict order of ranking between countries can be misleading because, in some cases, a number of countries are clustered around a very narrow range of outcomes. Relatively minor differences in the measured per capita volumes can result in a different country order which may or may not be statistically significant (the OECD's rule of thumb is that there is potentially an error of about five percentage points in PPPs and the per capita volumes derived from them). Therefore, four groupings have been used to provide a broad overview of the results for all 30 OECD countries that participated in the 2002 PPP round. All the country per capita volume indexes are based on the average of the 30 OECD Member countries "OECD30" = 100.

- a high-income group (above 120): Ireland, Luxembourg, Norway, Switzerland and the United States of America;
- a high-middle income group (between 100 and 119): **Australia** , Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Italy, Japan, the Netherlands, Sweden and the United Kingdom;
- a low-middle income group (between 50 and 99): the Czech Republic, Greece, Hungary, Korea, New Zealand, Portugal and Spain;
- a low-income group (less than 50): Mexico, Poland, the Slovak Republic and Turkey.

COMPARATIVE PRICE LEVELS

A “comparative price level” (CPL) is the ratio between a PPP and the corresponding exchange rate. CPLs provide a measure of the differences in price levels between countries. They indicate the number of units of the common currency needed to buy the same volume of a given product group or aggregate in each country. In Table 1 the PPPs are expressed in terms of the \$US as the base (ie, \$US = 1.00). The comparable price level indexes are expressed on the base of the OECD30 = 100 to correspond with the per capita volume estimates which are also on a base of OECD30 = 100.

In calculating the price level indexes, it is necessary to standardise the PPPs to an OECD30 level compared with the \$US = 1.00 (the relevant factor is 0.906 - see attached table). As an example, to calculate the comparative price level for Australia, the 2002 PPP compared with the \$US was 1.33 while the average exchange rate in 2002 was \$A1.84 = \$US1.00. Therefore, the comparative price level for Australia in 2002 compared with the USA was 72 (1.33 / 1.84), which indicates the price level in Australia in 2002 for the goods and services included in GDP was only 72% of that of the USA. Australia’s comparative price level was 80 when compared with the OECD30 (1.33 / 1.84 / 0.906), which indicates the price level in Australia in 2002 for GDP was 80% of the average of the 30 OECD countries.

DETAILED RESULTS

Table 1 presents the detailed results for all 30 OECD countries for the 2002 PPP benchmark round. The PPPs are expressed in terms of \$US = 1.00, while the price level indexes and the indexes of per capita GDP for each country are shown on the base of the average of the 30 OECD Member countries = 100.

It is important to note the OECD’s warning that “at the level of GDP, a broad and arbitrary rule of thumb is that differences in indices of real final expenditure and real final expenditure per head need to be at least five percentage points to be considered as statistically significant” (OECD Purchasing Power Parities and Real Expenditures - 1999 Results , page 13).

TABLE 1: PPPs AND COMPARISONS OF GDP FOR OECD COUNTRIES - 2002

Country	PPPs (\$US =1.00)	Price level indexes (OECD30 =100)	Per capita GDP (OECD30 =100)
Australia	1.33	80	110
Austria	0.912	95	118
Belgium	0.883	92	112
Canada	1.22	86	116
Czech Republic	14.2	48	65
Denmark	8.43	118	118
Finland	0.967	100	109

France	0.900	94	109
Germany	0.959	100	105
Greece	0.678	70	75
Hungary	114	49	56
Iceland	92.1	111	115
Ireland	1.00	104	129
Italy	0.825	86	105
Japan	143	126	107
Korea	778	69	72
Luxembourg	0.980	102	205
Mexico	6.58	75	37
Netherlands	0.921	96	118
New Zealand	1.46	75	86
Norway	9.14	126	144
Poland	1.82	49	44
Portugal	0.658	68	74
Slovak Republic	16.2	39	49
Spain	0.743	77	91
Sweden	9.36	106	111
Switzerland	1.80	128	128
Turkey	611482	44	26
United Kingdom	0.610	101	113
United States	1.00	110	142
OECD 30	0.906	100	100
EU15 (a)	0.899	93	105

(a) The 15 Member States of the European Union (EU) in 2002 were Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom
Source: Organisation for Economic Co-operation and Development (OECD)

The OECD released the summary results above in January 2005. The detailed results will be published later in 2005 in a publication similar to that containing the 1999 results.

FURTHER INFORMATION

A summary of the methods used in calculating PPPs was contained in the Appendix to **Purchasing Power Parities and Real Expenditures**, which was published in the March 2002 issue of the **Australian Economic Indicators**. This article contained details of the 1999 OECD benchmark estimates and can be found on the ABS web site.

Further information on PPPs can be obtained from Keith Woolford on Canberra (02) 6252 6673 or email <keith.woolford@abs.gov.au>

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